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(54) BASE MATERIAL FOR LITHOGRAPHY

(57)Abstract:

PROBLEM TO BE SOLVED: To ensure a superior conformability and an antireflection effect and to form a satisfactory resist pattern by incorporating a specified alkali-insoluble acrylic resin and a high light absorbing substance.

SOLUTION: This base material contains alkali-soluble acrylic resin having a wt. average mol.wt. of 500,000-2,000,000 and a high light absorbing substance or further contains a triazine compd. having two crosslinking functional groups according to need. The acrylic resin is a polymer obtd. by polymerizing a monomer such as glycidyl (meth)acrylate. When the wt. average mol.wt. of the acrylic resin is <500,000, conformability is not improved. In the case of >2,000,000, the solubility of this base material to a solvent decrease, it is difficult to form a uniform coating film and antireflection effect deteriorates.

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CLAIMS

[Claim(s)]

[Claim 1] Substrate material for lithography containing alkali insolubility acrylic resin of weight average molecular weight 500,000-2,000,000, and high extinction nature matter.

[Claim 2] Furthermore, substrate material for lithography containing a triazine compound with at least two arch-forming functional groups according to claim 1.

[Claim 3] Substrate material for lithography according to claim 1 or 2 whose alkali insolubility acrylic resin is the copolymer of glycidyl methacrylate and methyl methacrylate.

[Claim 4] Substrate material for lithography according to claim 2 or 3 whose triazine compound with at least two arch-forming functional groups is a melamine or guanamine which has hydroxyl or/and an alkoxy group.

[Claim 5] Substrate material for lithography according to claim 1 to 4 which is at least one sort as which high extinction nature matter is chosen from hydroxy benzophenones, screw (hydroxyphenyl) sulfones, and screw (hydroxyphenyl) sulfoxides.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the new substrate material for lithography, and the substrate material for lithography which can control the effect of conformal nature and the scattered reflection from a substrate, or a standing wave, is excellent in the acid-resisting effect in more detail, and can form a good resist pattern.

[0002]

[Description of the Prior Art] Conventionally, in manufacture of a semiconductor device, micro processing by the lithography using a photoresist constituent is performed. Said micro processing is the processing method which forms the thin film of a photoresist constituent on a silicon wafer, irradiates activity beams of light, such as ultraviolet rays, through the mask pattern with which the pattern of a semiconductor device was drawn on it, develops negatives and carries out etching processing of the silicon wafer by using the obtained resist pattern as a protective coat. However, the activity beam of light used by the high integration of a semiconductor device progressing is also in the inclination short-wavelength-ized from i line (365nm) to an ArF excimer laser (248nm) in recent years. In connection with this, the effect of the scattered reflection from the substrate of an activity beam of light or a standing wave poses a big problem, and the substrate material in which a curcumine, PIKURISHIN, the color chosen from a coumarin, and the substrate material containing a polyamine acid polymer contain the resin and the high extinction nature matter which carried out the polymerization of a diphenylamine derivative and the melamine derivative to JP,3-67261,B under existence of an acid catalyst is proposed by JP,59-93448,A as substrate material for lithography which solves it. However, a limit is in the amount of the ultraviolet ray absorbent which the compatibility of an ultraviolet ray absorbent and a resinous principle is not enough, and can blend upwards, INTAMIKISHINGU arose between the resist layer and the acid-resisting layer, and said substrate material for lithography was not able to heighten the acid-resisting effect enough. Then, these people proposed the substrate material for lithography containing the triazine compound, the high extinction nature matter, and alkali insolubility acrylic resin which have at least two arch-forming functional groups for the substrate material which contains the copolymer and ultraviolet ray absorbent of glycidyl methacrylate and methyl methacrylate as substrate material for lithography without said defect in JP,6-35201,A again by JP,8-87115,A. Said substrate material for lithography raises the fidelity of the resist pattern to a mask pattern while controlling the echo from the substrate of exposure light. Although it is, it is becoming less enough to form [to have an adverse effect on the configuration of the resist pattern after dry etching processing, so that it follows on detailed-ization of a semiconductor device progressing to a quarter micron (0.25 micrometers) from a half micron (0.5 micrometers), and progressing to a micro-processing process 0.2 more micrometers or less, and the thickness difference of the thickness of the level difference upper part and the level difference lower part is large and it is inferior to the so-called conformal nature, and] a good detailed resist pattern.

[0003]

[Problem(s) to be Solved by the Invention] In order for it to turn out that it is desirable when raising the so-called conformal nature which lessens the difference of the thickness of the level difference upper part of the level difference substrate of a substrate material spreading film and the thickness of the level difference lower part as a result of this invention person's etc. repeating research wholeheartedly in view of such the actual condition forms the detailed resist pattern below the above-mentioned quarter micron, and to raise this conformal nature, making polymerization degree of alkali insolubility acrylic resin or more into 500,000 completes a header and this invention for a good thing.

[0004] Namely, this invention is excellent in conformal nature and the acid-resisting effect, and aims at offering the substrate material for lithography which can form a good resist pattern.

[0005]

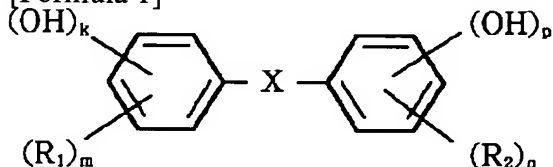
[Means for Solving the Problem] This invention which attains the above-mentioned object relates to substrate material for lithography containing alkali insolubility acrylic resin of weight average molecular weight 500,000-2,000,000 and high extinction nature matter, and a triazine compound that has at least two arch-forming functional groups if needed further.

[0006] Alkali insolubility acrylic resin in this invention Glycidyl (meta) acrylate, such as glycidyl acrylate and glycidyl methacrylate, It is the polymer obtained by carrying out the polymerization of the monomers, such as acrylic-acid (meta) alkyls, such as a methyl acrylate, an ethyl acrylate (meta), and acrylic-acid (meta) propyl. (Meta) the weight average molecular weight -- 500,000-2,000,000 -- desirable -- poly glycidyl (meta) acrylate of 800,000-1,300,000 -- It is the copolymer of poly methyl (meta) acrylate, poly ethyl (meta) acrylate, glycidyl (meta) acrylate, and alkyl (meta) acrylate etc. Especially, 2:8-8:2, and substrate material that contains a copolymer of 3:7-7:3 preferably do not have [a weight ratio of glycidyl (meta) acrylate and methyl methacrylate] INTAMIKISHINGU with a resist layer, and moreover, a front ** SU selection ratio is high in a degree of film decrease of substrate material to the upper resist, and it is suitable. Improvement in conformal nature is not found less than by 500,000, and if weight average molecular weight exceeds 2,000,000, solubility over a solvent of substrate material will worsen, it becomes difficult to form [of a uniform paint film] weight average molecular weight of said alkali insolubility acrylic resin, and the acid-resisting effect is inferior.

[0007] The above-mentioned alkali insolubility acrylic resin is manufactured by following method. The sum total weight is received in a monomer of the above-mentioned instantiation. Namely, a twice [1 - 5 weight] as many organic solvent as this, For example, ketones, such as a methyl ethyl ketone and an acetone, benzene, toluene, It dissolves in halogenated hydrocarbon, such as aromatic hydrocarbon, such as ethylbenzene, chloroform, and a carbon tetrachloride, etc. To it, azobisisobutyronitril, azobisvaleronitrile, benzoyl peroxide, Polymerization initiators, such as lauryl peroxide, are added at 0.01 - 0.5% of the weight of a rate to sum total weight of a monomer. It is made to react, stirring with reaction temperature of 50-80 degrees C in nitrogen-gas-atmosphere mind for 3 to 12 hours, and an obtained polymer is added into alcohol, such as a methanol and ethanol, and is deposited, and a method of carrying out reduced pressure drying of it etc. is mentioned.

[0008] High extinction nature matter which is the component of substrate material of this invention has high absorbing power to light in a sensitization property wavelength region of a sensitization component in a resist layer formed on substrate material, and substrate material or extinction nature matter well-known as a component of an antireflection film can be used for it that what is necessary is just the matter which can prevent scattered reflection by level difference on a standing wave produced by the echo from a substrate, or a front face of a substrate. Specifically, they are a SARISHITO system, a benzophenone system, a benzotriazol system, a cyanoacrylate system, an azo system, a polyene system, an anthraquinone system, or the general formula-ization 1. [0009]

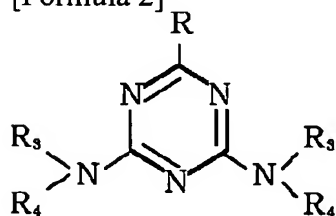
[Formula 1]



the inside of a formula, and X -CO-, -SO- or -SO₂-, and R1 and R2 -- respectively -- a hydrogen atom, a halogen atom, a low-grade alkyl group, or a lower alkoxy group -- it is -- excite -- even if mutually the same, you may differ again, and k, m, p, and q are the integers of 1-3, respectively, and fill the relation between k+m=5 and p+q=5. the case where R1 is plurality -- every -- the case where R1 may be the same, you may differ again, and R2 is plurality -- every -- R2 may be the same or may differ again. The compound expressed is mentioned. X with the compound expressed with said general formula-ization 1 as an example of -CO- A - dihydroxy benzophenone, 2, 2', and 2 and 2 '4, 4'-tetra-hydroxy benzophenone, 2-hydroxy-4-methoxybenzophenone, 2-hydroxy-4-octoxybenzophenone, Hydroxy benzophenones, such as 2, 2'-dihydroxy -4, and a 4'-dimethoxy benzophenone, are mentioned. X as an example of -SO₂- A screw (2, 4-dihydroxy phenyl) sulfone, a screw (3, 4-dihydroxy phenyl) sulfone, A screw (3, 5-dihydroxy phenyl) sulfone, a screw (3, 6-dihydroxy phenyl) sulfone, A screw (4-hydroxyphenyl) sulfone, a screw (3-hydroxyphenyl) sulfone, Screw (hydroxyphenyl) sulfones, such as a screw (2-hydroxyphenyl) sulfone and a screw (3, 5-dimethyl-4-hydroxyphenyl) sulfone, are mentioned. X as an example of -SO- A screw (2, 3-dihydroxy phenyl) sulfoxide, A screw (2, 4-dihydroxy phenyl) sulfoxide, a screw (2, 5-dihydroxy phenyl) sulfoxide, A screw (3, 4-dihydroxy phenyl) sulfoxide, a screw (3, 5-dihydroxy phenyl) sulfoxide, A screw (5-chloro -2, 3-dihydroxy phenyl) sulfoxide, A screw (5-chloro -2, 4-dihydroxy phenyl) sulfoxide, A screw (5-chloro -2, 3, 4-trihydroxy phenyl) sulfoxide, A screw (5-chloro -2, 4, 6-trihydroxy phenyl) sulfoxide, A screw (2, 4-dihydroxy-6-methylphenyl) sulfoxide, Screw (hydroxyphenyl) sulfoxides, such as a screw (2, 3, 4-trihydroxy-6-methylphenyl) sulfoxide and a screw (2, 4, 6-trihydroxy-6-methylphenyl) sulfoxide, are mentioned. especially -- hydroxy benzophenones and inside -- 2, 2', 4, and 4' -- a - tetra-hydroxy benzophenone -- Also in screw (hydroxyphenyl) sulfones A screw (4-hydroxyphenyl) sulfone, Screw (hydroxyphenyl) sulfoxides and the substrate material which contains a screw (2, 4-dihydroxy phenyl) sulfoxide especially i line (365nm) or deepUV, The permeability especially to a KrF excimer laser with a wavelength of 248 micrometers is low, and it is suitable from the place which heat crosslinking reaction nature can be made [place] high, and does not generate INTAMIKISHINGU.

[0010] Moreover, it is the general formula-ization 2 which has at least two functional groups which can form bridge formation between a self-comrade, either of the components used together, or both with heating as a triazine compound with at least two arch-forming functional groups added if needed [of being the component of the substrate material of this invention]. [0011]

[Formula 2]



(-- the inside of a formula, and R -- a hydrogen atom, an alkyl group, an aralkyl radical, an aryl group, or three R₄ -NR(s) -- it is -- R₃ and R -- four sets may be mutually the same, or you may differ again, a hydrogen atom, a methylol radical, and an alkoxy methyl group are shown, respectively, and at least two in 4-6 R₃ and R₄ in a molecule are a methylol radical or an alkoxy methyl group.) -- the substitute melamine or substitute guanamine expressed can be mentioned. As said functional group, a methylol radical or an alkoxy methyl group can be mentioned, and a methylol radical or an alkoxy methyl group is contained per triazine ring in the or more an average of 3 less than six range. A dimer and a trimer are sufficient as said triazine compound, and it can be manufactured by the method of making a melamine or guanamine react with formalin, and methylol-izing it in a boiling water, or making lower alcohol react to this further, and alkoxy-izing. The melamine which the melamine and an average of 5.8 methoxymethyl radicals which an average of 3.7 methoxymethyl radicals replaced replaced can come to hand as commercial item MX-750 and MW-30 (Sanwa chemical company make) in these compounds,

respectively.

[0012] Since INTAMIKISHINGU will not arise or the high extinction nature matter 10 - 40 weight sections, and a uniform solution will not be obtained to the alkali insolubility acrylic resin 100 weight section if it is 20 - 30 weight section preferably, the acid-resisting effect will become inadequate if less than said range, and it exceeds, the blending ratio of coal of each component in this invention is not desirable.

[0013] moreover, the case where the triazine compound which has at least two arch-forming functional groups if needed is blended -- the total quantity 100 weight section of this and the high extinction nature matter -- receiving -- alkali insolubility acrylic resin -- the 1 - 100 weight section -- 5 - 20 weight section is preferably good. If loadings exceed said range, when a uniform solution will not be obtained, since acid-resisting effect becomes inadequate, it is not desirable.

[0014] Are good to dissolve in a solvent in the activity of the substrate material of this invention. As this solvent Concretely An acetone, a methyl ethyl ketone, cyclopentanone, a cyclohexanone, Ketones, such as methyl amyl ketone, methyl isoamyl ketone, 1 and 1, and a 1-trimethyl acetone Ethylene glycol and ethylene glycol mono-acetate, a diethylene glycol, Diethylene-glycol mono-acetate, propylene glycol, and propylene glycol mono-acetate or these monomethyl ether, The monoethyl ether, the monopropyl ether, the monobutyl ether, Polyhydric alcohol, such as the monophenyl ether, and the derivative of those, and the cyclic ether like dioxane Ester, such as ethyl lactate, methyl acetate, ethyl acetate, butyl acetate, methyl pyruvate, pyruvic-acid ethyl, 3-methoxy methyl propionate, and 3-ethoxy ethyl propionate, can be mentioned. Said solvent may be independent, or may mix and use two or more sorts again.

[0015] The substrate material for lithography of this invention can add the additive which is further compatible if needed in addition to the above-mentioned component. For example, organic acids, such as the acetic acid which is the crosslinking reaction accelerator of a triazine compound, oxalic acid, a maleic acid, o-hydroxybenzoic acid, 3, 5-dinitro benzoic acid, 2, 6-dihydroxybenzoic acid, and SAX (Mitsui Toatsu Chemicals, Inc. make), can be added in less than 5% of the weight of the range to the solid content of substrate material. Moreover, fluorochemical surfactants, such as Sir chlorofluocarbon SC-103, SR-100(Asahi Glass Co., Ltd. make) EF-351 (northeast fertilizer company make), Fluorad Fc-431, Fluorad Fc-135, Fluorad Fc-98, Fluorad Fc-430, and Fluorad Fc-176 (Sumitomo 3 M company make), etc. are mentioned to improvement in spreading nature, the surfactant for striae SHON prevention, and a concrete target. The addition of said additive has desirable less than 2000 ppm to substrate material solid content.

[0016] The substrate material for lithography of this invention cannot ask a negative mold and a positive type, but can use any resists. The positive resist which contains the (i) naphthoquinonediazide and novolak resin as such a resist, (ii) The positive resist containing the compound which generates an acid by exposure, the compound which has the radical on which an acid decomposes into and the solubility over an alkali aqueous solution increases, and alkali fusibility resin, The positive resist containing the alkali fusibility resin which has the radical on which the compound and acid which generate an acid by exposure decompose into, and the solubility over an alkali aqueous solution increases, (iii) (iv) Although the negative resist containing the compound, the cross linking agent, and alkali fusibility resin which generate an acid by exposure etc. is mentioned, it is not limited to these.

[0017] If one example of the suitable operation of the substrate material for lithography of this invention is explained, after carrying out revolution spreading of the substrate material solution which dissolved in the organic solvent which described the substrate material of this invention above, for example on the substrate first, and was prepared with a spinner etc., and the substrate material layer of 0.05-0.5-micrometer thickness is formed. [the temperature of 100-300 degrees C] Crosslinking reaction occurs in the substrate material of this invention at said temperature, and it becomes insoluble to an alkali solution, and is hard coming to form an INTAMIKISHINGU layer with the upper resist layer. After forming a substrate material layer, on it, revolution spreading of the resist layer is carried out with a spinner etc., it dries and a resist layer is prepared. Subsequently, it glares, exposing ultraviolet rays through the mask pattern of business using the light source which emits light, for example, a low

pressure mercury lamp, a high-pressure mercury-vapor lamp, the arc light, a xenon lamp, or an excimer laser stepper, or operating an electron ray. Subsequently, if it is a positive type when immersed in an alkali aqueous solution like a developer, for example, 1 - 10% of the weight of a tetramethylammonium hydroxide aqueous solution, and an exposure portion is a negative mold, dissolution clearance of the unexposed portion will be carried out selectively, and a resist pattern faithful to a mask pattern will be formed.

[0018] The above-mentioned substrate layer is patternized by the dry etching method using chlorine gas etc. by using a resist pattern as a mask. In order to make a selection ratio high in said processing, you may silanize the upper resist layer. Although it can carry out as an example of said silanizing processing by putting the resist layer which carried out patterning to the steam of sililation reagents, such as hexamethyldisilazane, a hexa methyl SHIKUROTOIRI silazane, and other polyfunctional silazanes, for 1 - 60 minutes at the temperature of the range of 30-100 degrees C after carrying out patterning of the upper resist, it is not limited to these.

[0019]

[Embodiment of the Invention] Next, although this invention is further explained to details based on an example, this invention is not limited at all by these examples.

[0020] The example 1 (manufacture of the acrylic resin of weight average molecular weight 1,300,000) of manufacture

Glycidyl methacrylate 100g and methyl methacrylate 100g are dissolved in methyl-ethyl-ketone 200g, and it was made to react at 60 degrees C for about 7 hours, adding N and N'-azobisisobutyronitril 0.02g, and writing and *(ing) in nitrogen-gas-atmosphere mind. The reactant was carried out under notes into 1l. of methanols after reaction termination, the polymer was deposited and reduced pressure drying of the obtained polymer was carried out under the room temperature. The yield of a polymer was 100g and weight average molecular weight was 1,300,000.

[0021] The example 2 (manufacture of the acrylic resin of weight average molecular weight 570,000) of manufacture

In the example 1 of manufacture, the polymer was obtained like the example 1 of manufacture except having been referred to as N and N'-azobisisobutyronitril 0.04g. The yield of a polymer was 100g and weight average molecular weight was 570,000.

[0022] The example 3 (manufacture of the acrylic resin of weight average molecular weight 170,000) of manufacture

In the example 1 of manufacture, the polymer was obtained like the example 1 of manufacture except having been referred to as N and N'-azobisisobutyronitril 0.08g. The yield of a polymer was 100g and weight average molecular weight was 170,000.

[0023] The example 4 (manufacture of the acrylic resin of weight average molecular weight 80,000) of manufacture

In the example 1 of manufacture, the polymer was obtained like the example 1 of manufacture except having been referred to as N and N'-azobisisobutyronitril 0.2g. The yield of a polymer was 100g and weight average molecular weight was 80,000.

[0024] FC-430 (Sumitomo 3 M company make) 500ppm which is the surfactant of the MX-750 (Sanwa chemical company make) 50g, screw (4-hydroxyphenyl) sulfone 50g, and the fluorine system by which an average of 3.7 methoxy methylol radicals are replaced by 10g of polymers obtained in the example 1 of example of manufacture 5 manufacture per melamine ring were dissolved in propylene-glycol-monomethyl-ether acetate 1000g, it filtered using the membrane filter whose aperture is 0.2 micrometers, and the solution of substrate material was obtained.

[0025] In the example 5 of example of manufacture 6 manufacture, the solution of substrate material was obtained like the example 5 of manufacture except having replaced with what obtained the polymer in the example 2 of manufacture.

[0026] In the example 5 of example of manufacture 7 manufacture, the solution of substrate material was obtained like the example 5 of manufacture except having replaced with what obtained the polymer in the example 3 of manufacture.

[0027] In the example 5 of example of manufacture 8 manufacture, the solution of substrate material was obtained like the example 5 of manufacture except having replaced with what obtained the polymer in the example 4 of manufacture.

[0028] the polymers 10g and 2 obtained in the example 1 of example of manufacture 9 manufacture, 2', 4, and 4' -- dissolve FC-430 (Sumitomo 3 M company make) 500ppm which is the surfactant of - tetra-hydroxy benzophenone 3g and a fluorine system in propylene-glycol-monomethyl-ether acetate 100g, and use the membrane filter whose aperture is 0.2 micrometers -- it passed and the solution of substrate material was obtained.

[0029] In the example 9 of example of manufacture 10 manufacture, the solution of substrate material was obtained like the example 9 of manufacture except having replaced with what obtained the polymer in the example 2 of manufacture.

[0030] In the example 9 of example of manufacture 11 manufacture, the solution of substrate material was obtained like the example 9 of manufacture except having replaced with what obtained the polymer in the example 3 of manufacture.

[0031] In the example 9 of example of manufacture 12 manufacture, the solution of substrate material was obtained like the example 9 of manufacture except having replaced with what obtained the polymer in the example 4 of manufacture.

[0032]

[Example]

The solution of each substrate material obtained in examples 1 and 2 and the example 1 of a comparison, and the examples 5-8 of 2 manufactures was applied with the spinner on the silicon wafer which has the level difference of 0.2 micrometers, and the substrate material layer of 0.2 micrometers of thickness was formed. Subsequently, the substrate material coat was formed by making it dry for 90 seconds at 90 degrees C, and heating for 90 seconds at 180 degrees C. The difference of the level difference up thickness of said substrate material coat and level difference lower thickness is measured, conformal nature is investigated, and the result is shown in a table 1.

[0033] Then, TDUR-P007 (TOKYO OHKA KOGYO CO., LTD. make) which is the chemistry amplification mold positive resist which consists of an acid generator and hydroxystyrene system resin was applied with the spinner on the substrate material coat, it dried for 90 seconds at 90 degrees C, and the resist layer of 0.7 micrometers of thickness was formed. Said resist layer was exposed through the mask pattern using NSR-2005EX8A (NIKON CORP. make), subsequently exposure afterbaking processing (PEB) was performed for 90 seconds at 110 degrees C, negatives were developed in 2.38% of the weight of the tetramethylammonium hydroxide aqueous solution, and the resist pattern was formed. Next, dry etching was performed at 30mTorr, output 150W, and the temperature of 20 degrees C by making chlorine gas into etchant using plasma etching system TUE-1102 (TOKYO OHKA KOGYO CO., LTD. make). The result of having investigated the configuration of the obtained resist pattern is shown in a table 1.

[0034] In addition, A in a table means the sharp pattern on a rectangle, and B means roundish [wore the top section].

[0035]

[A table 1]

実施例 及び 比較例	下地材の 製造例	アクリル系 樹脂の重量 平均分子量	コンフォー マル性 (Å)	レジストパ ターン形状
実施例 1	製造例 5	130 万	1100	A
実施例 2	製造例 6	57 万	1508	A
比較例 1	製造例 7	17 万	1808	B
比較例 2	製造例 8	8 万	2008	B

[0036] The solution of each substrate material obtained in examples 3 and 4 and the example 3 of a comparison, and the examples 9-12 of 4 manufactures was applied with the spinner on the silicon wafer which has the level difference of 0.2 micrometers, and the substrate material layer of 0.2 micrometers of thickness was formed. Subsequently, the substrate material coat was formed by making it dry for 90 seconds at 90 degrees C, and heating for 90 seconds at 180 degrees C. The difference of the level difference up thickness of said substrate material coat and level difference lower thickness is measured, conformal nature is investigated, and the result is shown in a table 1.

[0037] Then, THMR-iN200 (TOKYO OHKA KOGYO CO., LTD. make) which is the chemistry amplification mold negative resist which consists of an acid generator, alkali fusibility resin, and a cross linking agent was applied with the spinner on the substrate material coat, it dried for 90 seconds at 110 degrees C, and the resist layer of 0.7 micrometers of thickness was formed. Said resist layer was exposed through the mask pattern using NSR-2005i10D (NIKON CORP. make), subsequently exposure afterbaking processing (PEB) was performed for 90 seconds at 100 degrees C, negatives were developed in 2.38% of the weight of the tetramethylammonium hydroxide aqueous solution, and the resist pattern was formed. Next, dry etching was performed at 30mTorr, output 150W, and the temperature of 20 degrees C by making chlorine gas into etchant using plasma etching system TUE-1102 (TOKYO KOGYO CO., LTD. make). The result of having investigated the configuration of the obtained resist pattern is shown in a table 1.

[0038] In addition, A in a table means the sharp pattern on a rectangle, and B means roundish [wore the top section].

[0039]

[A table 2]

実施例 及び 比較例	下地材の 製造例	アクリル系 樹脂の重量 平均分子量	コンフォー マル性 (Å)	レジストパ ターン形状
実施例 3	製造例 9	130 万	800	A
実施例 4	製造例 10	57 万	1410	A
比較例 3	製造例 11	17 万	1721	B
比較例 4	製造例 12	8 万	2010	B

[0040]

[Effect of the Invention] The substrate material for lithography of this invention has high conformal nature and the outstanding acid-resisting effect, can form a resist pattern, especially a resist pattern 0.25 micrometers or less good, and is suitable as substrate material for micro processing.

[Translation done.]